

OXALACETATE
AMINO ACID \rightarrow \downarrow \rightarrow KETO ACID
ASPARTATE
ATP \rightarrow \downarrow \rightarrow ADP
 β -aspartylphosphate
NADH \rightarrow \downarrow \rightarrow NAD⁺ + P_i
aspartic- β -semialdehyde
PYRUVATE \rightarrow \downarrow \rightarrow 2H₂O
2,3-dihydrodipicolinate
NADPH \rightarrow \downarrow \rightarrow NADP⁺
 Δ^1 -piperidine-2,6-dicarboxylate
GLUTAMATE \rightarrow \downarrow \rightarrow α -KETOGLUTARATE
L,L-diaminopimelate
 \downarrow
D,L-diaminopimelate
 \rightarrow CO₂
LYSINE

ASADH
DHDPS
DHDPR
DAPEP
DAPDC

HDH
NADH
NAD⁺
NADP⁺

homoserine
aspartic- β -semialdehyde
PYRUVATE
2,3-dihydrodipicolinate
 Δ^1 -piperidine-2,6-dicarboxylate
GLUTAMATE
L,L-diaminopimelate
D,L-diaminopimelate

HK
ATP
ADP

O-phospho-homoserine
homoserine
aspartic- β -semialdehyde
PYRUVATE
2,3-dihydrodipicolinate
 Δ^1 -piperidine-2,6-dicarboxylate
GLUTAMATE
L,L-diaminopimelate
D,L-diaminopimelate

CS
H₂S
O-acetylserine
O-phospho-homoserine
homoserine
aspartic- β -semialdehyde
PYRUVATE
2,3-dihydrodipicolinate
 Δ^1 -piperidine-2,6-dicarboxylate
GLUTAMATE
L,L-diaminopimelate
D,L-diaminopimelate

TS
P_i
Cys
CYSTEINE
O-phospho-homoserine
homoserine
aspartic- β -semialdehyde
PYRUVATE
2,3-dihydrodipicolinate
 Δ^1 -piperidine-2,6-dicarboxylate
GLUTAMATE
L,L-diaminopimelate
D,L-diaminopimelate

cystathionine
homocysteine
N5-methyltetrahydro-
pteroyltriglutamate
pyruvate + NH₃
tetrahydropteroyl
triglutamate
pyruvate + NH₃
tetrahydropteroyl
triglutamate

SERINE
acetyl CoA \rightarrow \downarrow \rightarrow CoA
O-acetylserine
O-phospho-homoserine
homoserine
aspartic- β -semialdehyde
PYRUVATE
2,3-dihydrodipicolinate
 Δ^1 -piperidine-2,6-dicarboxylate
GLUTAMATE
L,L-diaminopimelate
D,L-diaminopimelate

ISOLEUCINE
METHIONINE
S-adenosylmethionine

α -ketobuturate
cystathionine
homocysteine
N5-methyltetrahydro-
pteroyltriglutamate
pyruvate + NH₃
tetrahydropteroyl
triglutamate
pyruvate + NH₃
tetrahydropteroyl
triglutamate

SERINE
acetyl CoA \rightarrow \downarrow \rightarrow CoA
O-acetylserine
O-phospho-homoserine
homoserine
aspartic- β -semialdehyde
PYRUVATE
2,3-dihydrodipicolinate
 Δ^1 -piperidine-2,6-dicarboxylate
GLUTAMATE
L,L-diaminopimelate
D,L-diaminopimelate

ISOLEUCINE
METHIONINE
S-adenosylmethionine

α -ketobuturate
cystathionine
homocysteine
N5-methyltetrahydro-
pteroyltriglutamate
pyruvate + NH₃
tetrahydropteroyl
triglutamate
pyruvate + NH₃
tetrahydropteroyl
triglutamate

LYSINE

Figure 2A

SEQ ID NO: 7 MS-----RHL-----* * * * *
 SEQ ID NO: 52 MG-----Y-----NVAIVGATGAVGETFLTV
 SEQ ID NO: 43 -----RVAVGATGEVGRFLKV
 SEQ ID NO: 2 -----
 SEQ ID NO: 45 MQAAAAVHRPHLLGAYPGGRRRPSST--VRMALREDGPSVAIVGATGAVGQEFRLRV
 SEQ ID NO: 6 -MASLSVLRHNHLFSG-PLPARPKPTSSSSSRIRMSLRNGPSIAVVGVTGAVGQEFRLSV
 SEQ ID NO: 49 -MASLSVLRHNHLFSG-PLPARPKPTSSSSSRIRMSLRNGPSIAVVGVTGAVGQEFRLSV
 SEQ ID NO: 47 ARASLSVLRHNHLFSG-PLPARPKPTSSSSSRIRMSLRNGPSIAVVGVTGAVGQEFRLSV
 SEQ ID NO: 4 -----
 SEQ ID NO: 51 MQAAAA-VHRPHLLAASPLGGRASRRPST---VRMALREDGPSVAIVGATGAVGQEFRLRV
 1 60

SEQ ID NO: 7 LEERNFPIKSLYPLASSRSVGKTVTFRDQELDVLDLA-EFDVSKVDLALFSAGGAVSKEY
 SEQ ID NO: 52 LEERNFPVDELVLVYASERSEKVLTFKKEYTVKALNKENSFKGIDIALFSAGGSTSKEW
 SEQ ID NO: 43 -----AVQDLAAPGAFDGVDFIALFSAGGSVSRKY
 SEQ ID NO: 2 -----
 SEQ ID NO: 45 ISSRGFPYRSLRLLASERSAGKRLPFEGQEYTVQDLAAPGAFDGVDFIALFSAGGVSRAH
 SEQ ID NO: 6 LSDRDFFPYRSIHLASKRSAGRRITFEDRDYVQELT-PESFDGVDIALFSAGGSISKHF
 SEQ ID NO: 49 LSDRDFFPYRSIHLASKRSAGRRITFEDRDYVQELT-PESFDGVDIALFSAGGSISKHF
 SEQ ID NO: 47 LSDRDFFPYRSIHLASKRSAGRRITFEDRDYVQELT-PESFDGVDIALFSAGGSISKHF
 SEQ ID NO: 4 -----
 SEQ ID NO: 51 ITARDFFPYRSLRLLASERSAGKRLPFEGRDYTVQDLAAPGAFDGVDFIALFSAGGSISRHAH
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Figure 2D

SEQ ID NO: 7	VADNIRKGAATNAVQIAEILQREFLLKLSLPQ	*
SEQ ID NO: 52	VADNIRKGAATNAVQIAELLVKEGLI	+
SEQ ID NO: 43	CGDQIRKGAALNAVQIAEML	+
SEQ ID NO: 2	CGDQIRKGAALNAVQIAEML	+
SEQ ID NO: 45	CGDQIRKGAALNAVQIAEML	+
SEQ ID NO: 6	---	+
SEQ ID NO: 49	CGDQIRKGAALNAVQIAEML	+
SEQ ID NO: 47	CGDQIRKGAALNAVQIAEML	+
SEQ ID NO: 4	CGDQIRKGAALNAVQIAEML	+
SEQ ID NO: 51	CGDQIRKGAALNAVQIAEML	+

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Figure 3A

SEQ ID NO:20	MD-----TFSYRDAE-----
SEQ ID NO:57	MGQTNSETQQARLYTONSQQLLRSFLLHLIFGYQSHKTLRMAAATQFLSQPSSLNPHQ
SEQ ID NO: 9	-----
SEQ ID NO:11	M-----AAANLLSRSL-----PTPNTIRTSHPTPRSPAV-----
SEQ ID NO:13	L-----H-----
SEQ ID NO:15	-----
SEQ ID NO:19	-----
SEQ ID NO:54	C-----NTHCLVGKIFH-----QQHTAMAGSNILSHSPSLPKTYSHS
SEQ ID NO:17	-----
SEQ ID NO:56	-----

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SEQ ID NO:20	+	+++	**	++
SEQ ID NO:57	-----LKNQTSQRSRSIPVLSLKSTLKLKRLSV--KAAVVSQNSSKTVTKFDHCFKSSDGFLY			
SEQ ID NO: 9	-----			
SEQ ID NO:11	-----VSFPRRRARLSVCASVSMASPSPPQPAAGVPHCFRRGADGYLY			
SEQ ID NO:13	-----			
SEQ ID NO:15	-----			
SEQ ID NO:19	-----			
SEQ ID NO:54	LNQNALSQKLFFLPLKFATTKPRALRAVLSQLNAVKTSVEDTKNAHFQHCFTKSEDGYLY			
SEQ ID NO:17	-----			
SEQ ID NO:56	-----			

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SEQ ID NO: 20	ARLGAGFDIVSRGELERVLAAAGDPAKVVFSGVGKTRDDMRRALEVGVHCFNVESGEELE
SEQ ID NO: 57	RSLGCGAVLVSGNELRLALRAGDPTKCIFNGNGKSLEDLVLA AQEGVF-VNVDSEFDLN
SEQ ID NO: 9	-----FNGNGKTLEHLKLAESGVF-VNVDSEFDLE
SEQ ID NO: 11	RELGCGAVLVSGNELRLALQAGDPARCIFNGNGKTLEDLKLAESGVF-VNVDSEFDLE
SEQ ID NO: 13	-----GVF-VNIDSEFDLE
SEQ ID NO: 15	-----
SEQ ID NO: 19	RHLGCGAVLVSGNELK-----
SEQ ID NO: 54	RHLGCGAVLVSGNELKLALRAGDPTRCIFNGNGKILEDLVLA AQEGVF-VNIDSEFDLE
SEQ ID NO: 17	-----
SEQ ID NO: 56	-----

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Figure 4C

SEQ ID NO: 60	++ ++	KKLDKVGAR	----		
SEQ ID NO: 29		----	FPKEEFIDEVENILR	----	DYVE
SEQ ID NO: 22		AQLDTLGARVIATS	----	SLN	----
SEQ ID NO: 24		----	----	----	----
SEQ ID NO: 59		AQLDRVGARVISTS	----	TLE	----
SEQ ID NO: 26		KQLDRILGARRIPNTFFSSLSEACRFQEPDFFQLARNTLSADRS	----	SHVFEISDQSSILVWRSE	----
SEQ ID NO: 28		----	----	----	----
					361
					420
SEQ ID NO: 60		----	----	----	LVNSVSR
SEQ ID NO: 29		NTIRTEVGKGV	----	EVV	----
SEQ ID NO: 22		----	----	----	----
SEQ ID NO: 24		----	----	----	----
SEQ ID NO: 59		----	----	----	----
SEQ ID NO: 26		QEKHTQAGSSVWVEIIDEIKTIRSVLWTLKHVLDFLCFVFI	----	IFLSCYLSQSSKRSHFYF	----
SEQ ID NO: 28		----	----	----	----
					421
					480
SEQ ID NO: 60		----	----	----	----
SEQ ID NO: 29		----	----	----	----
SEQ ID NO: 22		----	----	----	----
SEQ ID NO: 24		----	----	----	----
SEQ ID NO: 59		----	----	----	----
SEQ ID NO: 26		LVSCLILAFEHVLFL	----	----	----
SEQ ID NO: 28		----	----	----	----
					481
					496

Figure 5A

SEQ ID NO: 66	M--ASFINNPLTSLCNTKSERNNLFKISL-----YEAQSLGFSKLNLSRKRKVAFPS	60
SEQ ID NO: 32	M--AD-----AKST-----	
SEQ ID NO: 65	M--ASLVNNAYAAIRTSKLE-----LREVKNLANFR	
SEQ ID NO: 62	-----MASWSSPSAANAASGARFGFPFSGGQRLAPCPSLVRGT	
SEQ ID NO: 64	ARGSNYGTTPLSNTSESEQRKMASWSSPVAA--AALQVHFGSSCFFSAR--SPRQTILLPP	
SEQ ID NO: 31	M--AV-----ERSG-----	

SEQ ID NO: 66	VVCKAV-----SVPTKSS-----TEIEGLNIAEDVTQLIGNTPM	120
SEQ ID NO: 32	-----IAKDVTELIGNTPM	
SEQ ID NO: 65	VGPPSSLS-----CNNFKKVSSSPIT--CKAVSLSPSTIEGLNIAEDVSQIGKTPM	
SEQ ID NO: 62	PAPTLVLRLLHPDGRGHGLLAHTGPPSSR-CRAVA---AEVGGLNIANDVTQLIGNTPM	
SEQ ID NO: 64	LARNPTLTIQP--RPHPPFRNINSSSSSWMCHAVA---AEVEGLNIADDDVTQLIGKTPM	
SEQ ID NO: 31	-----IAKDVTELIGNTPM	

SEQ ID NO: 66	VYLNNTIAKGCVANIAAKLEIMEPCCSVKDRIGFSMIVDAEEKGLISPGKTVLVEPTSGNT	180
SEQ ID NO: 32	VYLNRVVDGCVARVAAKLEMMEPCCSSVKDRIGYSMISDAENKGLITPGESVLIETSGNT	
SEQ ID NO: 65	VYLNNVSKGSVANIAAKLESMEPCCSVKDRIGYSMIDDAEQKGVITPGKTTLVEPTSGNT	
SEQ ID NO: 62	VYLNNVVKGSVANVAAKLEIMEPCCSVKDRIGYSMINDAEQKGLITPGKSVLVEATSGNT	
SEQ ID NO: 64	VYLNNI VKGCVANVAAKLEIMEPCCSVKDRIGYSMISDAEEKGLITPGKSVLVEPTSGNT	
SEQ ID NO: 31	VYLNKLADGCVARVAAKLELMEPCSSVKDRIGYSMIADAEKGLITPGKSVLIEPTSGNT	

Figure 5B

SEQ	ID NO: 66	GIGLAFIAASRGYKLILTMPASMSLERRVI LKAFGAELVLTDPAKGMKGAVSKAEIILNN
SEQ	ID NO: 32	GIGLAFIAAAKGYRLIIICMPASMSLERRTILRAFGAELVLTDPARGMKGAVQKAEEIKAK
SEQ	ID NO: 65	GIGLAFIAAARGYKITITMPASMSMERRVILKAFGAELVLTDPAKGMKGAVEKAEEILKK
SEQ	ID NO: 62	GIGLAFIAASKGYKLILTMPSSMSMERRVLLRAFGAELVLTDAAGMKGALDKATEILNK
SEQ	ID NO: 64	GIGLAFIAASRGYKLILTMPASMSMERRVLLKAFGAELVLTDAAGMKMGAVDKATEILNK
SEQ	ID NO: 31	GIGLAFMAAARGYKLIIITMPASMSLERRIILLAFGAELVLTDPAKGMKGAVQKAEEILAK

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SEQ	ID NO: 66	** * * * *	* * * * *	*	*	*	*	*	*	*	*	*
SEQ	ID NO: 32	TPDAYILQQFDNPANPKIHYETTGPEIWEDTKGKIDILVAGIGTGGTITGTGRFLKEQNP										
SEQ	ID NO: 65	TPNSYILQQFENPANPKIHYETTGPEIWRSGGKIDALVSGIGTGGTVTGAGKYLKEQNP										
SEQ	ID NO: 62	TPDSYMLQQFDNPANPKIHYETTGPEIWEDTKGKVDIFVAGIGTGGTISGVGYLKERNP										
SEQ	ID NO: 64	TPNSYMLQQFDNPANPQVHYETTGPEIWEDSKGKVDIFIGIGTGGTISGAGRFLKEKNP										
SEQ	ID NO: 31	TPDAYMLQQFDNPANPKVHYETTGPEIWEDSKGKVDVFIGIGTGGTISGAGRFLKEKNP										
SEQ	ID NO: 31	TPNAYILQQFENPANPKVHYETTGPEIWKSDGKIDAFVSGIGTGGTITGAGKYLKEQNP										

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SEQ ID NO: 66      NIKIIGVEPTESNVLGGKPGPHKIQIGIGAGFIPGNLDQDVMDEVIEISSDEAVETARTL
SEQ ID NO: 32      NIKLYGVEPVESAILSGGKPGPHKIQIGIGAGFIPGVLVNLLDDEVIQVSSEESIETAKLL
SEQ ID NO: 65      GVQVIGIEPTESNILSGGKPGPHKIQGLGAGFVPSNLDLGMDEVIEVSSEAEVEMAKQL
SEQ ID NO: 62      GIKVIGIEPSESNILSGGKPGPHKIQIGIGAGFVPRNLDSDILDDEVIEISSDEAVETAKQL
SEQ ID NO: 64      GIKVIGIEPSESNILSGGKPGPHKIQIGIGAGFVPRNLDSEVLDEVIEISSDEAVETAKQL
SEQ ID NO: 31      NIKLIGVEPVESVLSGGKPGPHKIQIGIGAGFIPGVLEVNLLDEVVQISSDEAIEITAKLL

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Figure 5C

SEQ ID NO: 66	ALQEGLLVGISSGAAALAAIQVGRPENAGKLI	GVVFP	SYG	ERYL	SSIL	FQSI	REECE	KM
SEQ ID NO: 32	ALKEGLLVGISSGAAAAAIIAKRPENAGKLI	VAVFP	SF	GERYL	STVL	FESV	KRETEN	M
SEQ ID NO: 65	AMKEGLLVGISSGAAAAAIVRIGKRPENAGKLI	AVVFP	SF	GERYL	SSIL	FQSI	REECE	NM
SEQ ID NO: 62	AVQEGLLVGISSGAAAAAIIKVAKRPENAGKLI	VVFP	SF	GERYL	SSVL	YQSI	REECE	NM
SEQ ID NO: 64	ALQEGLLVGISSGAAAAAIIKVAKRPENAGKLI	VVFP	SF	GERYL	SSIL	FQSI	REECE	KL
SEQ ID NO: 31	ALKEGLFVGISSGAAAAAIIQIAKRPENAGKLI	VAVFP	SF	GERYL	SSVL	FESV	RREAES	M

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SEQ ID NO: 66	KPEL
SEQ ID NO: 32	VFEP
SEQ ID NO: 65	KPE -
SEQ ID NO: 62	QPEP
SEQ ID NO: 64	QPEP
SEQ ID NO: 31	TFEP

421 424

Figure 6A

SEQ ID NO: 41	MTSSLSLHSS-----FVPSFADLSDRGLISKNSPTSVISKVPTWEKKQISNR-N	
SEQ ID NO: 34	-----	
SEQ ID NO: 68	M-----AVAVPNAPGRLLFLLQSTPPN-PSSASAARAQSF-RVPP-LRLSLFRMA	
SEQ ID NO: 36	-----	
SEQ ID NO: 70	MSAAAAAAAAIPTSLGRLFHLRPTN--PSRNLSGSSAQPLRLSYHPRLTLRRME	
SEQ ID NO: 38	MFSSAISQKPFLLQSLVIDR-YAQSTTAATRWECGLGNKSENFSTKRVL-----RAE	
SEQ ID NO: 40	-----	
SEQ ID NO: 72	M-----AAA--AATRLFLLHSSPPSLLPCPNPSPSSAHTP-RPAY-PRLALAHMA	60

SEQ ID NO: 41	SFKLNCVMEKSVDGQTHSTVNNTT-DSLNTMNIKE-----EASVSTLLVNLDNKFDPFD	
SEQ ID NO: 34	-----	
SEQ ID NO: 68	GRSLTVIAGASGGERDLSASAVSVEALDSVSDS-LETKEPSVSTMLTSFENSFDKYG	
SEQ ID NO: 36	-----	
SEQ ID NO: 70	AP--AAIADSHGG--DLSASAVGAELGAVAAPDFDVENKPSVATILTSFENSFDGFG	
SEQ ID NO: 38	GFKLNCLVE----NREMEVSSSLVDDAAMSLSEEDLGEPSISTVMNFEKFDPPFG	
SEQ ID NO: 40	-----	
SEQ ID NO: 72	AAP-AAIAGPSGDSERDLSASAVSLEALGAVESGGDLERKEPSVATILTSFENSFDKYG	120

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SEQ ID NO: 41      * * * * * * * * * * * * * * * * * * * * * * *
AMSTPLYQTATFKQPSAIENGPDYTRSGNPTRDALLESLLAKLDKADRAFCFTSGMAALS
-----
SEQ ID NO: 34      * * * * * * * * * * * * * * * * * * * * * * *
ALSTPLYQTATFKQPSATDYGTYDYTRSGNPTRDVLQSLMAKLEKADQAF CFTSGMAALA
-----
SEQ ID NO: 68      * * * * * * * * * * * * * * * * * * * * * * *
SMSTPLYQTATFKQPSATDNGPDYTRSGNPTRDVLQSLMAKLEKADQAF CFTSGMAALA
-----
SEQ ID NO: 36      * * * * * * * * * * * * * * * * * * * * * * *
AISTPLYQTATFKQPSAIENGPDYTRSGNPTRDALLESLLAKLDKADRALCFTSGMAALS
-----
SEQ ID NO: 70      * * * * * * * * * * * * * * * * * * * * * * *
ALSTPLYQTATFKQPSATVNGAYDYTRSGNPTRDVLQSLMAKLEKADQAF CFTSGMASLA
-----
SEQ ID NO: 38      * * * * * * * * * * * * * * * * * * * * * * *
ALSTPLYQTATFKQPSATVNGAYDYTRSGNPTRDVLQSLMAKLEKADQAF CFTSGMASLA
-----
SEQ ID NO: 40      * * * * * * * * * * * * * * * * * * * * * * *
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SEQ	ID NO: 41	** *	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SEQ	ID NO: 34	AVTHLLIKNGEEIVAGDDVYGGSDRLLSQVVPRSGVVVKRVNTTKLDEVAAAIQPTKLWV -----																
SEQ	ID NO: 68	AVKHLQLAQQEIVAGEDIYGGSDRLLSQVVPRNGIVVKRVDTTKISDVVSAIGPSTRLVW -----																
SEQ	ID NO: 36	AVTHLLKSGQEIVAGEDIYGGSDRLLSQVAPRHGIVVKRIDTTKISEVTSAIG-----																
SEQ	ID NO: 70	AVTHLLKSGQEIVAGEDIYGGSDRLLSQVAPRHGIVVKRIDTTKISEVTSAIGPLTKLVW -----																
SEQ	ID NO: 38	AVRLVTGTGEEIVTGDDVYGGSDRLLSQVVPRGTGIVVKRVNCDLDEVAAAIGLRTKLVW -----																
SEQ	ID NO: 40	AVTHLLQAGQEIVAGEDIYGGSDRLLSQVVPRNGIVVKRVDTTKINDVTAIIGPLTRLVW -----																
SEQ	ID NO: 72	AVTHLLQAGQEIVAGEDIYGGSDRLLSQVVPRNGIVVKRVDTTKINDVTAIIGPLTRLVW -----																

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Figure 6C

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***** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
SEQ ID NO: 41 LESPTNPRQQISDIRKISEMAHAQGALVLVDNSIMSPVLSRPLELGADIVMHSATKFIAG
SEQ ID NO: 34 -----IAHSHGALVLVDNSIMSPVLSRPLELGADIVMHSATKFIAG
SEQ ID NO: 68 LESPTNPRQQITDIKTISEIAHSHGALVLVDNSIMSPVLSRPLELGADIVMHSATKFIAG
SEQ ID NO: 36 -----
SEQ ID NO: 70 LESPTNPRLQITDIKKIAEIAHYHGALVLVDNSIMSPVLSRPLELGADIVMHSATKFIAG
SEQ ID NO: 38 LESPTNPRLQISDIRKISEMAHSHGALVLVDNSIMSPVLSQPLELGADIVMHSATKFIAG
SEQ ID NO: 40 LESPTNPRQQITDIKKISEIAHSHGALVLVDNSIMSPVLSWPIELGADIVMHSATKFIAG
SEQ ID NO: 72 LESPTNPRQQITDIKKISEIAHSHGALVLVDNSIMSPVLSWPIELGADIVMHSATKFIAG

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***** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
SEQ ID NO: 41 HSDVMAGVLAVKGEK-LAKEVYFLQNSEGSLAPFDCWLCRLGICTMALRIEKQQENARK
SEQ ID NO: 34 HSDLMAGILAVKGES-LAKEVGFLQNAEGSLAPFDCWLCRLGICTMALRVEKQQANAQK
SEQ ID NO: 68 HSDLMAGILAVKGES-LAKEVGFLQNAEGSLAPFDCWLCRLGICTMALRVEKQQANAQK
SEQ ID NO: 36 -----
SEQ ID NO: 70 HSDLMAGILAVKGESSLAKEIAFLQNAEGSLAPFDCWLCRLGICTMALRVEKQQANAQK
SEQ ID NO: 38 HSDIMAGVLAVKGEK-LGKEMYFLQNAEGSLAPFDCWLCRLGICTMALRIEKQQDNAQK
SEQ ID NO: 40 HSDLMAGILAVKGES-LAKEIAFLQNAEGSLAPFDCWLCRLGICTMALRVEKQQDNAQK
SEQ ID NO: 72 HSDLMAGILAVKGES-LAKEIAFLQNAEGSLAPFDCWLCRLGICTMALRVEKQQDNAQK

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